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TECHNOLOGICAL PROGRESS IN COMMUNIST CHINA **MAIN FILE**

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## TECHNOLOGICAL PROGRESS IN COMMUNIST CHINA

*[Following are translations from selected issues of Chinese-language newspapers. Complete source information is given under individual article headings.]*

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## I. PRESENT TECHNOLOGY INSPIRES CONTINUATION OF LEAP FORWARD

Kuang-ming Jih-pao, Peiping,  
1 May 1960, page 1 (excerpt)

Unsigned article

Today the Chinese people are happily celebrating the first "May First" of the 1960's.

As we celebrate "May First," we are further inspired by the current situation to leap forward boldly. Our socialist construction is extremely satisfactory. The nationwide movement for technological innovation and technological revolution is a great force with which to conquer technological backwardness. In economic terms, the movement has significantly raised our labor productivity and lowered the cost of production. According to a survey conducted in cities relatively strong in their industrial foundations, to achieve 70 percent mechanization or semimechanization would raise labor productivity by more than 10 percent. In the light of the planned targets for 1960, every 1 percent increase in labor productivity in the national industries is equivalent to an increase of 1,500 million yuan in the value of production; every 1 percent decrease in industrial cost is equivalent to an increase of more than 600 million yuan in national income. The great economic significance is by no means confined to this. What is more important is to achieve a greater leap forward in the future, thereby laying the economic and technological foundations of the nation. What makes us all the more enthusiastic is the fact that the movement for technological innovation and technological revolution is the inevitable result of our continued revolution on the economic, political, ideological, and cultural fronts, and that its development has in turn greatly changed the people's political and ideological outlook and further facilitated the cause of cultural revolution. The great achievements of this movement have not only developed the people's Communist spirit, known for the union of scientific analysis and boldness in thinking and in action, and made manifest the people's Communist tendency toward mutual assistance, they have also greatly enhanced the people's faith in and knowledge of accelerated socialist construction. The movement for technological innovation and technological revolution is now flourishing. The initial results are indeed most heartening. Is this not a favorable situation resulting from the maximum enthusiasm on the part of the people? Throughout the country, the people are now engaged in the establishment of people's communes in the urban areas. This is another aspect of the current situation which is most heartening.

## II. THE MACHINE INDUSTRY'S "FOUR-MODERNIZATIONS" MOVEMENT

Kung-jen Jih-pao *Workers' Daily*,  
Peiping, 30 April 1960, page 3

Jao Pin, Vice Minister  
of the First Machine-  
Industry Ministry

### Current Developments in Mechanization, Semimechanization, Automation, and Semiautomation in the Machine Industry

Since the 8th session of the 8th Plenum of the Central Committee of the Party, and particularly since the launching, in immediate response to a directive of the Central Committee, of the technological-innovation and technological-revolution movement primarily concerned with mechanization, semimechanization, automation, and semiautomation, an unprecedentedly favorable situation has emerged in the machine industry as well as in all other fields. The movement can be properly described as a united effort on the part of all concerned, an irresistible tide that promises revolutionary changes.

The unity of purpose has reflected the people's spiritual reaction to this great movement, i.e., their affectionate regard for chairman Mao, their identification with the Party, and their support of the General Line. Struggling for high objectives on all fronts, they have thus quickly initiated a socialist emulation and cooperation movement based on "learning, competing, overtaking, and helping"--all for the acceleration of the fatherland's socialist construction.

The irresistible tide has reflected the universal support of this movement. Indeed, the movement is forging ahead at the pace of 1,000 li per day, and one can hardly believe how much is taking place in the twinkling of an eye. Everybody is talking of innovation; everywhere there is revolution. The more than 4 million workers in the machine industry throughout the country, like the workers in all other fields, are struggling day and night for technological revolution in the spirit of finding answers for themselves. Wherever possible, they aim at complete mechanization and automation; otherwise they first initiate semimechanization and semiautomation. Wherever possible, they try to adopt foreign methods; otherwise they use native methods. As a result of their forceful ambition, their passionate enthusiasm, and their relentless struggle, the newly created atmosphere is comparable to that during the 1958 campaign for the refining of steel and iron.

The splendid scene has reflected the technological revolution in full bloom everywhere. During the past 2 months, the workers within the machine industry have submitted more than 4,080,000 proposals relative to technological innovation and technological revolution and 1,940,000 of these proposals have been adopted. The results to date include: 1,360 automatized plants and factories, nearly 2,000 automatized production lines, more than 37,000

automatized single machines, and more than 8,200 innovated belt machine tools. In more than 182,000 cases, manual operations have been mechanized. The degree of mechanization has jumped from 40 to 66.4 percent. In the machine industry, rapid progress has been reported in such little mechanized operations as metal-casting, forging, welding, and transportation. The degree of mechanization has jumped from 20 to 49.5 percent in metal-casting; from 30 to 68 percent in forging; to 60 percent in welding; from 30 percent early this year to 65.5 percent at present in transportation, which is relatively slow but significant enough. The intensification of the "four-modernizations" movement has greatly facilitated the overall development of the technological-revolution movement. According to incomplete statistics, new products totaled 5,073 during the first quarter alone; and the consumption of metal materials has been reduced by more than 40,000 tons.

A totally new climate has been generated. At the Hei-lung-chiang field conference, it was proposed that "old factories be equipped with new machines; old soldiers be equipped with new rifles; new soldiers become old soldiers; new factories be further improved; native and foreign methods be adopted simultaneously; and, through united as well as individual effort, one person be equal to several persons and one factory be equal to several factories." These proposed steps have since been carried out throughout the country. The increase of mechanization and automatization has first of all guaranteed a continuous leap forward in production and in the everfulfillment of the national plan ahead of schedule. In the machine industry the established target of combined production value during the first quarter was overfulfilled by 50 percent 21 days ahead of schedule, i.e., an increase of 84 percent over the same period last year. According to incomplete statistics up to the end of March, the machine industry had succeeded in reducing the labor force by more than 100,000 workers. In other words, we have achieved increased production not only without an increase in the labor force but even with a reduction in labor expenditure. There have also been fundamental changes in production techniques in many factories. Tens of thousands of workers have freed themselves from labor-consuming manual operations; they have termed the current movement their "second liberation."

#### Demands for Further Development of the "Four-Modernizations" Movement in the Machine Industry

In the course of technological innovation and technological revolution, our machine industry has the following fundamental tasks. While striving for increased mechanization, semimechanization, automatization, and semiautomatization in the course of production, we should actively direct our attention to the improvement of old products and to the development of new ones, continue to innovate our technology and tools, properly economize in the

consumption of raw materials, actively improve enterprise management, and strengthen labor and production organization.

In order to facilitate the realization of the above-enumerated goals, we should, insofar as the current mechanization movement is concerned, hasten to strengthen such weak links as metal casting, forging, welding, and transportation. Insofar as automatization is concerned, we should actively resolve the contradiction between the increased variety of products and automatization. On the basis of generally increased production, we should strive for complete mechanization and automatization. To this end, all enterprises must formulate over-all plans for technological innovation with a view to developing production; and on the basis of the technological revolution, organize high-tide production movements, thereby guaranteeing the overfulfillment of this year's plan for a continued leap forward ahead of schedule and quickly improving the production capacity of the enterprises.

Generally speaking, metal casting, forging, welding, and transportation have always been the weak links, in terms of production capacity, in our machine industry. The First Machine-Industry Ministry has proposed that the "four-modernizations" movement in the machine industry should stress during the first half of this year the mechanization of metal casting, forging, welding, and transportation. Accordingly, a field conference was held in T'ai-yuan. We are confident that in carrying out the program drafted at this conference we shall double the production capacity in metal forging within the current year. As a matter of fact, marked achievements have been reported in many localities. For instance, the Shanghai Municipality has reported that rapid progress is being made in the mechanization of metal casting, forging, welding, and transportation. Up to the end of March, the degree of mechanization had been raised to 81.5 percent in casting; 92.9 percent in forging; 91.6 percent in welding; and 92.8 percent in transportation. It appears that if the people in the various localities make a special effort, particularly those enterprises that have thus far failed to place adequate emphasis on this problem, we shall be able to successfully carry out this campaign ahead of schedule and to celebrate our victory at the coming field conference in Shanghai.

The Central Committee has repeatedly pointed out that the rapid development of agriculture has an extremely important bearing on the over-all development of our national economy. Developing the machine industry of the hsiens and cooperative communes is one of the important means for accelerating the technological innovation in agriculture and realizing agricultural modernization. To this end, all workers in our machine industry should demonstrate the Communist spirit of cooperation by rendering energetic aid to agriculture and by assisting the hsiens and communes in their development of machine industry. These are some of our most glorious tasks. At the recent

field conference, the First Machine-Industry Ministry proposed that all plants under its jurisdiction assist the hsiens or people's communes in the establishment of some 4,000 machinery-manufacturing plants. It is hoped that the number may be increased to 10,000 in the next year and that there will be one "small foreign group" of such bases in every commune in 1962. These "small foreign groups" of machinery plants and "small foreign groups" of the steel and iron industry within the communes will complement each other, so that they will be able to manufacture not only simple mechanized farm tools and irrigation equipment but also simple parent machinery to facilitate operations. The machinery plants in the vicinity will be responsible for the construction of these machinery plants in the hsiens or communes, for the manufacture and supply of their equipment, for the installation of this equipment, and for the training of their technical personnel. In addition, they will establish regular contacts with these newly constructed plants. In the establishment of these plants, the larger plants will shoulder the heavier responsibilities. All plants will contribute such raw materials as may have resulted from savings in consumption. In this respect, we must learn from the Ch'eng-tu plants for the manufacture of measuring and cutting tools. They have helped in the establishment of 31 plants (including machinery plants), which is an outstanding and noble achievement. Mention should also be made of another "red flag," the Huai-hai Machinery Plant in T'ai-hsiang, which has contributed to the establishment of 14 hsien-operated plants and 51 commune-operated plants by contributing, loaning, or selling to these newly-established plants more than 400 simple machine tools, more than 130 surplus or idle machine tools, more than 10,000 miscellaneous tools, and more than 80 tons of raw materials. It has not only trained for these newly established plants more than 1,000 workers and technical personnel, it has also sent 500 of its own workers on several field trips to these newly established plants to improve their technological standard. In addition, it has contributed more than 10,000 yuan of its workers' extra income to the capital of these newly established plants. The great Communists' spirit of cooperation it has demonstrated in its aid to agriculture is a "red flag" not only in T'ai-hsiang but throughout the country. It is an inspiring example for us to follow. Insofar as this task is concerned, it is requested that the machine industry departments or bureaux of all provinces and municipalities formulate concrete plans, submit them to the provincial or municipal Party committees for approval, and take immediate action upon approval. We are confident that the realization of this goal will contribute significantly to the consolidation of the people's communes and to the acceleration of mechanization, water conservation, and electrification in agriculture.

### III. ANHWEI PROVINCE PUSHES PRODUCTION OF NITROGEN FERTILIZER

Kung-jen Jih-pao /Workers' Daily/, Unsigned article  
Peiping, 5 May 1960, page 2

Relying on the masses and for its own good, Anhwei Province has been extensively and expeditiously constructing "small modern groups" of nitrogen-fertilizer plants. Of the first group of synthetic-ammonia plants of an 800-ton annual capacity which have been under construction since the end of November of last year, 4 have commenced production; 5 are now engaged in pilot operations; and 11 are being equipped for mid-May completion. The construction of a second group of 25 small synthetic-ammonia plants throughout the province has also begun.

These small synthetic-ammonia plants are to produce liquid ammonia, which is a liquid nitrogen fertilizer. A synthetic-ammonia plant with an annual 800-ton capacity may produce 4,000 tons of liquid ammonia containing 0.2 percent ammonia, adequate for application to an area of 200,000 mu, thereby increasing food production by 26 million to 32 million chin or increasing the production of cotton seed by 13 million chin. The extensive construction of "small modern groups" of nitrogen-fertilizer plants will therefore contribute significantly to hastening the realization of our agricultural-development program.

The construction of small synthetic-ammonia plants is desirable because, among other considerations, they call for a small investment, consume only small quantities of raw materials, are easy to construct, and the required technical personnel can be trained quickly. It is therefore one of the "two legs" indispensable to the development of the nitrogen-fertilizer industry in accordance with the policy stressing "quality, quantity, economy, and speed." To construct a large synthetic-ammonia plant with a 50,000-ton annual capacity requires an investment of 1,400 yuan and 0.4 ton of steel per ton; to construct a small synthetic-ammonia plant with an 800-ton annual capacity requires only an investment of 1,200 yuan and 0.25 ton of steel per ton. A large ammonia plant has been under construction in Huai-nan Municipality for 2 years but it has not commenced production. On the other hand, most of the small plants with an 800-ton annual capacity throughout the province were constructed in approximately 2 months. The synthetic-ammonia plant with a 400-ton annual capacity was constructed in less than 50 days. In view of these advantages, all special districts, hsiens, and municipalities may be engaged in the development of the nitrogen-fertilizer industry. The many synthetic-ammonia plants

with 800-ton annual capacity which have been constructed or will be constructed in Anhwei are widely scattered throughout the province. There is hardly any hsien which does not have one. Thus raw materials can be secured locally, and the products can meet the local demand, thereby reducing the burden of transportation.

The rapid development of small synthetic-ammonia plants in Anhwei has been made possible by the political leadership and a continuous campaign against rightist conservatism. There was not a single nitrogen-fertilizer plant in Anhwei in the past. It was in July of last year that the Anhwei Provincial Committee of the Chinese Communist Party decided to make a special effort in this direction in the light of the experience of Ta-lien.

#### IV. COMMUNES URGED TO INITIATE TECHNOLOGICAL REVOLUTION

Ta Kung Pao, Piping, Unsigned article  
4 May 1960, page 3

While actively supporting agricultural production, the commune-operated industries throughout the country are currently engaged in an energetic movement for technological innovation and technological revolution, centering around mechanization, semimechanization, automation, and semiautomation. Within the short interval of 2 or 3 months, many factories, plants, and minor units have fundamentally initiated mechanized or semimechanized production, thus freeing themselves from heavy manual operations. In some cases, local-method automation and semiautomation have been introduced in the process of production. The commune-operated industries have thus entered into a new era of transforming the "small local group" into the "small nonlocal group."

There has been noticeable improvement in the commune-operated industries since last year's expansion and consolidation. However, the operational techniques of production remain relatively backward. According to a survey conducted in Liaoning, Hopei, Kwangtung, Chekaing, and Peking Municipality, only 15 percent of the commune-operated industries have been mechanized or semimechanized, while in some areas only 5 or 6 percent, or even less, have been so innovated. The technological backwardness as such is incompatible with the continued leap forward in our national economy and with the new tasks for the commune-operated industries with a view to accelerating the technological transformation in agriculture. The continued leap forward in our agricultural production and the acceleration of the technological transformation of agriculture urgently demand that the commune-operated industries supply more, better, more efficient, and less expensive tools and products to meet the needs of agriculture, forestry, animal husbandry, the auxiliary agricultural occupations, the fishing industry, and the everyday life of commune members; and, moreover, that they promptly fulfill the task of repairing agricultural machinery. The tasks of production for the commune-operated industries are considerable this year, as we plan to achieve a general increase of 50 percent over the production value of last year. The labor force in the rural areas is basically inadequate; now that we are to achieve an even greater leap forward in agricultural production, it is of course impossible to expect an increase in the number of rural workers joining the commune-operated industries. It is therefore imperative that we fulfill the tasks of increased production without increased manpower. The only solution is for the commune-operated industries to launch an intensive and extensive movement for technological innovation and technological revolution, thereby saving

time as well as manpower. This is a reliable guarantee for the continued leap forward in industrial production; this is also a more efficient way to serve agricultural production and the technological transformation in agriculture.

Unfortunately, there are some people who cannot fully appreciate the significance of and necessity for launching an energetic technological revolution in the commune-operated industries. Some are of the opinion that commune-operated industries should basically be confined to native-made rifles and native-made guns, and that there is little more to be done since many tools have already been innovated. Others are of the opinion that commune-operated industries cannot be compared to large factories since they are set up on the basis of "native-method operation." They maintain that without heavy equipment and technically trained personnel, they cannot attack big problems. The fact is, however, that precisely because the commune-operated industries are primarily set up on a basis of "native-method" manual operations, we find it all the more imperative to drastically innovate the tools of production. Contrary to the contention of those comrades, "native-method operation" can solve big problems and the native methods of production can not only be mechanized and semimechanized but also automated and semi-automated. Thus innovated, the native methods may even compare favorably with foreign methods. What can we do without equipment and technical know-how? The broad working masses have expressed it well: "If there are no machines, we shall manufacture them; if we are ignorant of technical know-how, we shall learn it; in the absence of adequate manpower, we shall find compensation in machines; if we are not furnished with raw materials, we shall look for them; we are determined not to adopt beggarism, we shall manage our own affairs." This is the proper attitude toward the technological revolution.

The working masses of the commune-operated industries are very enthusiastic about the technological innovation and technological revolution. What should be stressed is to practice political leadership and to launch mass movements. The results have shown that wherever the masses are fully mobilized, the accomplishments are correspondingly impressive. Take the commune-operated industries in T'ai-shan Hsien of Kwangtung Province for example: Under the leadership of the Party Committee, the working masses were mobilized in free expression and free debates. Consequently, within a short period the workers submitted 24,800 or more proposals for innovation. To date some 2,700 of these proposals have been adopted, and as a result efficiency has been raised by more than 50 percent in 633 cases, by 1 to 2 times in 463 cases, and by 3 to 4 times in 318 cases.

Technological revolution means the substitution of machinery for manual operations. After the installation of equipment, our next problem is how to develop the capacity of the machinery

and how to train the technical personnel. We must therefore fully utilize the available equipment and potential motive power in the rural areas and launch the necessary training programs. The commune-operated industries should not only make full use of their equipment and power and initiate technological innovation, they should also avail themselves of such agricultural machinery and irrigation equipment as may be spared by agricultural production. In some areas, people have introduced such methods as "adding legs to diesel engines," "multiple use of machinery," and "simultaneous employment of electricity, gas, water, fire, wind, and animals as sources of power." All these methods are designed to coordinate the use of facilities, "to make multiple use of machinery," and to solve the problem of power supply. They should be popularized. As regards the training of technical personnel, we should broadly adopt the apprentice system, sponsor public performance of technical operations, and institute short training programs, so that enough technical personnel can be quickly trained to meet the needs of the technological revolution.

So that the technological-revolution movement may progress under the proper leadership and systematically, all enterprises should under the leadership of the Party Branch immediately establish new or strengthen existing technological-revolution committees, technological study groups, and similar organizations; demonstrate concrete leadership in this task; and in the light of the characteristics of their respective production processes formulate both long-term and short-term plans for technological revolution.

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